UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/571,602	10/26/2006	Paolo Massimo Buscema	59836-140	9802

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KRAMER LEVIN NAFTALIS & FRANKEL LLP
INTELLECTUAL PROPERTY DEPARTMENT
1177 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

EXAMINER
BROWN JR, NATHAN H

ART UNIT	PAPER NUMBER
2129	

NOTIFICATION DATE	DELIVERY MODE
07/28/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

klpatent@kramerlevin.com

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>(3)</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>05 May 2008</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>13-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>13-28</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Examiner's Detailed Office Action

1. This Office Action is responsive to the communication for
application 10/571,602, filed May 5, 2008.

2. Claims 13-28 are pending. Claims 13-16, 18, 19 are
currently disclosed as amended. Claims 1-12 are cancelled.
Claims 17, 20-26 are previously presented. Claims 27 and 28 are
new.

3. After the previous office action, claims 13-26 stood
rejected.

Claim Rejections - 35 USC § 112, 2nd

4. The following is a quotation of the second paragraph of 35
U.S.C. 112:

> The specification shall conclude with one or more claims particularly
> pointing out and distinctly claiming the subject matter which the
> applicant regards as his invention.

5. Claims 13-28 are rejected under 35 U.S.C. 112, first
paragraph, as failing to comply with the written description
requirement. The claim(s) contains subject matter which was not
described in the specification in such a way as to reasonably
convey to one skilled in the relevant art that the inventor(s),
at the time the application was filed, had possession of the
claimed invention. Amended independent claim 13 recites "said
neural network is implemented in a computer having a processor
and memory". Examiner finds no disclosure of "a computer having
a processor and memory" in the Specification. Claims 14-28,
depending from claim, incorporate the new matter and are also
rejected under 35 U.S.C. 112, first paragraph, as failing to
comply with the written description requirement.

6. Claims 13-28 are rejected under 35 U.S.C. 112, first
paragraph, as failing to comply with the enablement requirement.
The claim(s) contains subject matter which was not described in
the specification in such a way as to enable one skilled in the
art to which it pertains, or with which it is most nearly
connected, to make and/or use the invention. Amended independent
claim 13 recites "said neural network is implemented in a
computer having a processor and memory". Examiner finds no

disclosure of "a computer having a processor and memory" in the

Specification. Therefore, how "said neural network is

implemented in a computer having a processor and memory" cannot

be described in the Specification in such a way as to enable one

skilled in the art to which it pertains, or with which it is

most nearly connected, to make and/or use the invention.

Claims 14-28, depending from claim, incorporate the new matter

and are also rejected under 35 U.S.C. 112, first paragraph, as

failing to comply with the enablement requirement.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

   Whoever invents or discovers any new and useful process, machine,
   manufacture, or composition of matter, or any new and useful improvement
   thereof, may obtain a patent therefor, subject to the conditions and
   requirements of this title.

8. Claims 13-27 are rejected under 35 U.S.C. 101 because the

claimed invention is directed to non-statutory subject matter:

abstraction and/or algorithm. Amended independent claim 13

recites:

   "A neural network, comprising: a plurality of nodes forming
   at least two layers, a first such layer being an input
   layer and a last such layer being an output layer, said
   input layer nodes and said output layer nodes being

> communicably connected…wherein said neural network is
> implemented in a computer having a processor and memory…".

Examiner considers the neural network disclosed in amended

independent claim 13 to be no more that a mathematical

abstraction or algorithm as no computer hardware implementing

said neural network is disclosed. Further, claim 13 recites

that "input data from a database" is transformed to produce a

final result of, "output data provided to a user". Examiner

considers such "output data" to be abstract, since it is never

disclosed that the neural network is every trained to solve a

specific and credible real-world problem nor that the input data

is from a real-world problem domain. Claim 13 is therefore

considered recite only the 101 judicial exceptions of

abstraction and/or algorithm and to be non-statutory under 35

U.S.C. 101. Claims 14-27 provide detailed mathematical

limitation of claim 13 without curing the deficiency of claim

13. While claim 27 recites "input data...acquired from a real

world phenomenon, process or measurement", no specific and

credible benefit is disclosed as resulting from processing this

data with the claimed neural network, thus this data care

considered to be merely *types of data* that could be processed.

Thus claims 13-27 are considered non-statutory under 35

U.S.C. 101.

9. Claims 13-27 are rejected under 35 U.S.C. 101 because the
claimed invention violates the doctrine of preemption. Amended
independent claim 13 recites a mathematical model (or
computational structure) well known to be a class of model that
utilizes Kolomogorov's theorem concerning the realization of
arbitrary multivariate functions, considered able to approximate
any continuous real-valued function. Further, Applicant limits
claim 13 with claim 27, reciting "input data...acquired from a
real world phenomenon, process or measurement, or is designed to
model, represent, approximate or express a real world
phenomenon, process or measurement." Clearly, claims 13 and 27
are directed toward a general computational capability able to
form models of any conceivable thing (represented in relational
domains or vectors) using an arbitrary multivariate function
able to approximate any continuous real-valued transformation.
Examiner considers this inventive arrangement to clearly violate
the doctrine of preemption. Since claims 14-26 depend from claim
13 without curing the deficiency of claims 13 and 27, claims 13-
27 are considered non-statutory under 35 U.S.C. 101.

10. Claim 28 is rejected under 35 U.S.C. 101 because the

claimed invention has no real world application. Independent

claim 28 recites a "program storage device readable by a

machine, tangibly embodying a program of instructions executable

by the machine to perform" the method of claim 13. Since claim

13 is considered to be directed to abstraction and/or algorithm,

claim 28 is considered not to produce a credible and specific

result to a real-world problem. Therefore, claim 28 is

considered non-statutory under 35 U.S.C. 101.

Response to Arguments

11. Applicant's arguments filed May 5, 2008 have been fully

considered.

Rejection of Claim 13 Under 35 U.S.C. §101

Applicant argues:

        Claim 13 has been amended to recite that the claimed
    neural network is implemented in a computer having a
    processor and memory and that the output data is provided
    to a user. Thus, Applicant submits, the claimed neural
    network is directed to a novel processing structure
    implemented in a real world device, a computer. Such a
    device allows a user to have better, more reliable and
    faster convergence of the algorithm to the best solution
    and avoiding also local minima during a learning phase. The
    claimed neural network can take as input a set of data from

a database, such as, for example, an input vector, and
output a nonlinear transformation of a nonlinear
transformation of said input data. The output data can then
be provided to a user, such as, for example, via a display
or a file, or both.

Given these amendments, Applicants respectfully
request that the 35 U.S.C. § 101 Rejections be removed. The
claimed computer implemented neural network is not an
abstract algorithm, but rather a tangible computational
structure. As such, claim 13 does not violate the doctrine
of preemption. An abstract algorithm is not claimed. A
specific computational structure implemented in a computer
is. Such computational structures implemented in computers
are well known, and highly useful for a variety of
computational tasks. Such structures can be seen as
specialized computational systems implemented in software.

Examiner responds:

Examiner fails to find "a computer having a processor

and memory" or a "display" disclosed in the Specification

that would suggest that the claimed neural network is

directed to a processing structure implemented in a real

world device (i.e., a computer). Further, Examiner

considers a result such as a "better, more reliable and

faster convergence of the algorithm to the best solution

and avoiding also local minima during a learning phase" to

be a solution to a class of general problems in machine

learning, rather than a specific and credible real-world

problem (e.g., face recognition).

Applicant comes to disclosing a real-world problems

with the breast cancer database analysis (see

Specification, pp. 30-31) and the Australian Credit Scoring
database analysis. However, it is noted that the purpose
of running the neural network with data from the breast
cancer database was to "analyse capabilities of the network
according to the present invention with regard to the over-
fitting properties", in the first case, and "to perform an
"Early Stopping" approach to reduce the over-fitting
phenomenon", in the second case. It is noted that the
purpose of running the neural network with data from the
Australian Credit Scoring database was to compare "between
a classic Back-propagation network BP and the network
according to the present invention SN on the Australian
Credit Scoring dataset, with "Early Stopping" (Training-
Testing-Prediction) and without (Training- Prediction)".

     All of these implementations are considered to be
applications of the neural network to solving research
problems in machine learning, rather than a real-world
problem. Thus, claim 13 is considered to remain directed
toward abstraction and/or algorithm and to be non-statutory
under 35 U.S.C. §101.

Rejection of Claim 13-26 Under 35 U.S.C. §102(b)

Applicant argues:

> …in Lin, at no output layer nodal processing is there
> a prior nonlinear transformation sub-step performed before
> the summing of inputs to that output layer. L e., at the
> nodal processing of the hidden layer, there is no nonlinear
> transformation prior to performing the step $net_q = Sum\{$
> $V_{qj}X_j,\}$, and at the nodal processing of the output layer
> there is no nonlinear transformation prior to performing
> the summing step $net_i = Sum\{w_{iq}Z_q\}$.
> In the claimed invention there is such a pre-summing sub-
> step (i. e., sub-step A(i)), in addition to the nonlinear
> processing after such summing, (i. e., step B).
>   Thus, the claimed invention is submitted as patentable
> over Lin, and similarly, over all prior art classical
> artificial neural networks.

Examiner responds:

Examiner finds Applicant's argument persuasive and

withdraws the rejection of Claim 13-26 Under 35 U.S.C.

§102(b) over *Lin*.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the

extension of time policy as set forth in 37 CFR 1.136(a).

     A shortened statutory period for reply to this final action

is set to expire THREE MONTHS from the mailing date of this

action. In the event a first reply is filed within TWO MONTHS
of the mailing date of this final action and the advisory action
is not mailed until after the end of the THREE-MONTH shortened
statutory period, then the shortened statutory period will
expire on the date the advisory action is mailed, and any
extension fee pursuant to 37 CFR 1.136(a) will be calculated
from the mailing date of the advisory action. In no event,
however, will the statutory period for reply expire later than
SIX MONTHS from the mailing date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Nathan H.
Brown, Jr. whose telephone number is 571-272- 8632. The
examiner can normally be reached on M-F 0830-1700. If attempts
to reach the examiner by telephone are unsuccessful, the
examiner's supervisor, David Vincent can be reached on 571-272-
3080. The fax phone number for the organization where this
application or proceeding is assigned is 703-872-9306.
Information regarding the status of an application may be
obtained from the Patent Application Information Retrieval

(PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status

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see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

                                        /David R Vincent/
                                        Supervisory Patent
                                        Examiner, Art Unit 2129

Nathan H. Brown, Jr.
July 25, 2008